

Executive Summary

The California Department of Fish and Game (Department), with the assistance of recovery teams representing diverse interests and perspectives, created the *Recovery Strategy for California Coho Salmon* (*Oncorhynchus kisutch*) (Recovery Strategy), a guide for the process of recovering coho salmon on the north and central coasts of California. The Recovery Strategy is organized at three scales. The first is at a broad geographic, range-wide resolution; the second is at a large watershed scale; and the third is at a finer scale that identifies actions needed within specific sub-watersheds.

The Recovery Strategy emphasizes cooperation and collaboration at many levels, and recognizes the need for funding, public and private support for restorative actions, and maintaining a balance between regulatory and voluntary efforts. Landowner incentives and grant programs are some of the many tools available to recover coho salmon. However, the success of this Recovery Strategy will ultimately be determined by the long-term commitment and efforts of all who live in, or are involved with, coho salmon watersheds. The Department believes that the commitment is there and that the execution of this plan will ultimately lead to the recovery of coho salmon throughout its California range.

BACKGROUND

A citizen's group called the Salmon and Steelhead Recovery Coalition petitioned the Fish and Game Commission (Commission) to list coho salmon north of San Francisco as an endangered species under the California Endangered Species Act (CESA) (FGC §2050 *et seq.*). In response to the petition, the Department issued a report to the Commission describing the status of coho salmon north of San Francisco (April 2002), recommending that coho salmon from San Francisco north to Punta Gorda be listed as endangered and that coho salmon from Punta Gorda north to the Oregon border be listed as threatened pursuant to the provisions of CESA. The division of coho salmon in California at Punta Gorda follows the Federal designation of Evolutionarily Significant Units (ESU): the California Central Coast (CCC) Coho ESU and the Southern Oregon-Northern California Coasts (SONCC) Coho ESU. On August 30, 2002, the Commission found that coho salmon warranted listing per the Department's recommendations.¹

The Department's recommendations and the Commission's decision were based on the best available information, which indicates coho salmon from San Francisco to the Oregon border have experienced a significant decline in the past 40 to 50 years. Coho salmon, including hatchery stocks, are currently six to 15 percent of their abundance during the 1940s. Coho salmon harvest decreased considerably in the late 1970s, despite a fairly stable rate of hatchery production. Recent abundance-trend information for several stream systems along the central and north coasts indicates an overall declining trend throughout California.

¹ Coho salmon south of San Francisco were previously listed as endangered by the State in 1994. The National Marine Fisheries Service (NMFS) listed coho salmon in the Central California Coast Evolutionarily Significant Unit (ESU) as threatened in 1996, and in the Southern Oregon/Northern California Coasts ESU as threatened in 1997, under the Federal Endangered Species Act of 1973.

In accordance with the Commission's direction and statutory requirements, the Department established a 21-member Coho Salmon Recovery Team (CRT) to focus on the species range-wide, and a 13-member local Shasta-Scott Recovery Team (SSRT) to focus on water and land use associated with agricultural practices in the Shasta and Scott river valleys in Siskiyou County. Tremendous effort, over a very constricted timeframe, was expended by both teams as members labored in good faith to find solutions to seemingly intractable problems. The Department is indebted to all team members for their creativity, perseverance, and valuable contributions to the completion of this critically important document. The teams provided numerous recommendations for the Department to consider in the development of this Recovery Strategy.

Rather than proceeding immediately with regulatory action to add the species to the threatened and endangered species lists, the Commission, pursuant to Fish and Game Code (FGC) §2114, deferred the regulatory action and directed the Department to prepare a recovery strategy for coho salmon within 12 months in accordance with FGC §2105 *et seq.* The Commission subsequently extended this deadline to February 2004. On February 4, 2004, the Commission adopted the Recovery Strategy, with amendments and inclusive of the selected timber management alternative.

RECOVERY GOALS

The primary objective of this Recovery Strategy is to return coho salmon to a level of sustained viability, while protecting the genetic integrity of both ESUs, so that they can be delisted and regulations or other protections under the CESA (FGC §2050 *et seq.*) will not be necessary. The Department defines sustained viability as a future condition when naturally producing coho salmon are adequately abundant and occupy a sufficient range and distribution to ensure against extinction due to environmental fluctuations, stochastic events, and human land- and water-use impacts.

A second objective of this Recovery Strategy is to achieve harvestable populations of coho salmon for Tribal, recreational, and commercial fisheries, so important to the cultural and economic well-being of California. The Department intends to continue its partnership with all stakeholders to implement appropriate portions of this plan to achieve this objective once the coho salmon has been delisted. Improving coho salmon populations and habitat is the means to achieve these two objectives.

Five goals have been identified to achieve delisting:

- GOAL I Maintain and improve the number of key populations and increase the number of populations and cohorts of coho salmon.
- GOAL II Maintain and increase the number of spawning adults.
- GOAL III Maintain the range, and maintain and increase distribution of coho salmon.
- GOAL IV Maintain existing habitat essential for coho salmon.
- GOAL V Enhance and restore habitat within the range of coho salmon.

An additional goal² has been identified for the second objective, which is to:

- GOAL VI Reach and maintain coho salmon population levels to allow for the resumption of Tribal, recreational, and commercial fisheries for coho salmon in California.

² This additional goal meets the requirements of FGC §2111(e), which was added by SB 216 (Statutes 2003 Chap. 854). This goal does not affect the first objective of the Recovery Strategy or the goals to achieve delisting.

RECOVERY IMPLEMENTATION

The causes for the decline of coho salmon are many and complex. In general, coho salmon require adequate flows, cold water, streamside shade, instream shelter and pools, and access to spawning gravels with a low fine sediment component. Protection of the best remaining habitat, especially in areas where coho salmon are still present, and improvements to degraded habitat are both necessary to recover coho salmon. Each of the recommendations addresses these two aspects of coho salmon recovery. On the whole, the strategy for recovery of coho salmon involves several approaches:

- a. Interim and long-term actions;
- b. Equitable apportionment of both public and private support and action;
- c. Equitable apportionment of regulatory and nonregulatory obligations;
- d. Scientifically, technologically, and economically reasonable means;
- e. Best available scientific data;
- f. Financial investments; and
- g. Long-term commitment and efforts of all involved in coho salmon watersheds.

This document includes over 85 range-wide recommendations, 320 watershed recommendations for the SONCC Coho ESU, 205 watershed recommendations for the CCC Coho ESU, and 145 watershed recommendations for the Shasta-Scott Pilot Program (SSPP). Three alternative recommendations for timber management were presented to the Commission in February 2004. The timber alternative recommended by the Department and approved by the Commission (Alternative C, with amendments) has been incorporated into this document.

As an example of range-wide recommendations, the following was taken from Chapter 7:

7.3 FISH PASSAGE

RW-III-A-01	Continue and complete assessments and prioritizations for correction of fish passage barriers.
RW-III-A-02	Develop and maintain a database of barriers to fish passage.
RW-III-C-01	Encourage funding authorities to allocate adequate resources to construct new crossings and upgrade existing crossings (bridges, culvert and fills, other crossings) within the range of coho salmon to accommodate 100-year flows and associated bedload and debris. Priority for upgrading should be based upon the potential impact to coho salmon habitat.

As an example of watershed recommendations, the following was taken from Chapter 8 for the Albion River HSA:

8.2.1.1 Albion River HSA

MC-AR-01	Place instream structures to improve gravel retention and habitat complexity.
MC-AR-02	Provide technical assistance and incentives to landowners in developing and implementing sediment reduction plans to meet requirements of the CWA TMDL, making watersheds with an implementation schedule the highest priority.
MC-AR-03	Conduct collaborative evaluations of priorities for treatment of barriers such as Fish Passage Forum.

Implementation schedules (presented in Chapters 9 and 10) provide stakeholders with an easy manual for restoration; that is, they can find a watershed of interest and then consider implementing the tasks for that watershed according to the task-levels assigned, or they can find a high priority watershed and then propose implementing the tasks accordingly. The prioritization of watersheds and tasks will assist the recovery effort by ensuring that limited public and private funds are directed where they will likely contribute most to coho salmon recovery.

As an example of an implementation schedule, here are the table entries from Chapter 9 for the Albion River HSA:

HSA PRIORITY	TASK LEVEL	TASK NUMBER	TASK DESCRIPTION	IDENTIFIED ACTION ENTITIES	ESTIMATED DURATION
Albion River HSA					
5	C	MC-AR-01	Place instream structures to improve gravel retention and habitat complexity.	Potential Lead: CDFG Others: Landowners, CCC, CDF, Watershed Groups, Mendocino County, RCDs	Interim/ Continual
5	C	MC-AR-02	Provide technical assistance and incentives to landowners in developing and implementing sediment reduction plans to meet requirements of the CWA TMDL, making watersheds with an implementation schedule the highest priority.	Potential Lead: NCRWQCB Others: CDFG, EPA, NOAA Fisheries, RCDs, Mendocino County, CDF, DPR	Interim
5	C	MC-AR-03	Conduct collaborative evaluations of priorities for treatment of coho salmon passage barriers, such as the Fish Passage Forum.	Potential Lead: CDFG, NOAA Fisheries, Caltrans, Mendocino County Landowners, Watershed Groups.	Interim/ Continual

Successful implementation of even the highest priority tasks will require individuals, organizations, and agencies to work in concert and with a clear understanding of what must be done to complete the recommended tasks and the time frame within which the tasks should be completed. To establish and maintain the coordination necessary for coho salmon recovery, the Department will designate a range-wide coordinator and at least one regional coordinator for each of the Department's central and northern coastal regions. The coordinators will work with the appropriate Department personnel, representatives from other agencies, watershed groups, landowners, and private and non-profit entities to leverage resources and coordinate recovery tasks. These tasks address coho salmon population and habitat protection and restoration, cooperation and collaboration between public and private entities, education and outreach, implementation and enforcement of existing laws, improved land management, assessment, monitoring and research, and better coordination among funding agencies for grant programs.

RECOVERY COSTS

An economic evaluation estimated the costs required to implement the Recovery Strategy. The total cost of the Recovery Strategy is about 4.5 billion dollars. However, this figure does not account for the cost of water acquisition for areas outside of the Scott and Shasta valleys. If water acquisition costs in other areas of the SONCC Coho ESU and in the CCC Coho ESU are proportional to those in the SSPP (where water acquisition accounts for about 20 percent of the total), it is likely that the costs of Recovery Strategy implementation will be closer to 5 billion dollars.

Although coho salmon recovery will have significant costs, it will also provide economic benefits. While this report does not quantify the economic benefits, they will very likely exceed the cost of recovery. The recovery of coho salmon to the point where they can be delisted will provide an economic stimulus to the coastal economy due to the lifting of regulatory requirements associated with a listed species. Benefits associated with Federally reserved fishing rights, increased commercial land and water use activities, multiple species benefits, improved water quality, and watershed health will be realized. The process of conducting restoration projects

will create local jobs, and the flow of restoration dollars will have significant direct and trickle-down benefits to economically depressed coastal communities. Recovering coho salmon to the point of sustained harvestable surpluses will provide economic expansion to the commercial and recreational fishing industries, and to the businesses and communities that depend on them. Harvestable surpluses will also provide direct economic benefit to Tribal fisheries.

Coho salmon recovery can also result in benefits associated with non-use values. These values include intrinsic values, which are based simply on the knowledge of the resource's existence, and bequest values which confer value to the resource for the benefit of future generations. For California coho salmon recovery, these could be significantly higher than the fiscal costs of recovery.

It should be clearly understood that coho salmon recovery will not require the identification of five billion dollars of "new" funds. Many sources of funds are already being directed at coho salmon recovery directly or at ecosystem restoration at the watershed level, which will likewise facilitate recovery. Examples of existing programs that address coho salmon recovery goals include the Department's Fisheries Restoration Grant Program, the California Coastal Conservancy's grant programs, and the various programs authorized by the Federal Farm Bill (Section 5.2). Many in-kind donations from the private sector of time, equipment, and expertise will continue to defray the total cost of recovery. The Recovery Strategy also identifies where existing local, State and Federal programs could be reprioritized and staff redirected to accomplish critical tasks.

Successful recovery of coho salmon will require a sustained long-term commitment of significant amounts of public and private funding, sufficient staff to provide technical assistance, and an accountable grant funding infrastructure. It is imperative that public funds spent on this effort are invested in scientifically sound projects that help coho salmon where they need it most. It is also important that the effort be coordinated among all agencies that fund watershed projects within the range of California coho salmon.